



DOCUMENT

Announcement of Opportunity for Interdisciplinary Scientists in the Comet Interceptor mission

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1 INTRODUCTION

Comet Interceptor (CI) is an ESA mission in cooperation with the Japan Aerospace Exploration Agency (JAXA). It aims to characterise a long period comet (potentially a dynamically new comet), or an interstellar object. The mission was adopted by the Science Programme Committee in June 2022.

A Science Working Team (SWT), appointed by ESA in coordination with JAXA, advises ESA on all aspects of the mission potentially affecting its scientific performance. The composition of the SWT is defined in the Science Management Plan (SMP).

This Announcement of Opportunity (AO) solicits applications of scientists based in ESA Member States and Japan to augment the scientific return of the Comet Interceptor mission, through the participation as Interdisciplinary Scientists (IDSs). IDSs will be members of the CI SWT.

2 PURPOSE OF THE PRESENT CALL

Through the present AO, the ESA Director of Science, in coordination with JAXA, invites scientists based in ESA Member States and Japan to apply for the Interdisciplinary Scientist positions in the Comet Interceptor mission.

The aim of this AO is to appoint up to four IDSs for the CI mission. The IDSs will be appointed for a first period of three years, renewable. ESA will not fund the activities of the IDSs (travel costs to attend meetings, etc.) and proposers are responsible for securing their own funding.

The schedule for this Call is given in Table 1.

Table 1. Schedule and deadlines for this Call

Event	Date
Release of this Call	3 April 2023
Mandatory Letters of Intent due	20 April 2023 at 12:00 hrs (noon) CEST
Proposals due	1 June 2023 at 12:00 hrs (noon) CEST
Appointment of IDSs	Q3 2023

2.1 Background documentation

- [AO-D1] Comet Interceptor Science Management Plan (SMP)
- [AO-D2] Comet Interceptor Definition Study Report



2.2 Mission overview

The primary goals of the CI mission are to provide the first-ever in situ (as opposed to ground-based observation) characterisation of a long period comet, which could be a dynamically new comet, or an interstellar object, and to perform the first simultaneous multi-point exploration of a cometary coma and nucleus.

The science of the mission encompasses two main themes: Comet Nucleus Science and Comet Environment Science. More specifically, the key questions to address are:

- Comet Nucleus Science - What is the surface composition, shape, morphology, and structure of the target object?
- Comet Environment Science - What is the composition of the coma, its connection to the nucleus (activity) and the nature of its interaction with the solar wind?

The CI mission consists of the main spacecraft (S/C A) and the two probes (named Probe B1 and Probe B2, respectively).

The CI payload complement includes remote sensing and in situ measurement instruments accommodated on-board the main S/C and the two probes, to enable performing multi-point observations of the selected object during the fly-by.

The CI mission will be launched together with the Ariel mission to the Sun-Earth second Lagrange point, L2. Following a waiting phase at L2, used to select the actual target object and to optimise the related transfer orbit, CI will cruise to the encounter and release the two probes shortly before performing the fly-by. The duration of the waiting phase depends on the actual target and its length is estimated to be four years. After their release, the two probes will perform autonomous operations, relaying the scientific data back to the main spacecraft. Following the encounter, the main spacecraft will downlink to Earth the data acquired during the fly-by. The maximum duration of the CI mission, from launch to the end of the post-encounter phase, is six years.

More details about the science objectives, spacecraft and payload characteristics and operation profile of the CI mission are available in [AO-D2].

2.3 IDS tasks

The CI SMP [AO-D1] defines the top-level scientific management of the mission, and describes the respective roles of the parties involved, the data products, the data products delivery scheme and the data rights. It also defines modes of participation of the scientific community in the CI programme, including IDSs.

IDSs are expected to focus their efforts on scientific cross-fertilisation. Therefore, IDSs should not be affiliated to or reflect instrument specific domains, but rather cover mission-related science themes and take part in the analysis of data from different CI instruments, also supported by, e.g., ground-based observation programmes for comet detection and



characterisation, theoretical modelling, and laboratory investigations. IDSs will have the same data rights as other SWT members. An IDS may also undertake specific tasks in areas such as modelling of the comet environment, science operation planning, hazard assessment and similar activities that may be required during the mission. It is foreseen to select at least one Interdisciplinary Scientist each for nucleus science and for coma science.

The IDSs, as part of their role, are members and will have to participate in the CI SWT activities, including attending the regular SWT meetings. Individual scientists applying for an IDS position can submit proposals as individuals, possibly supported by a team. The IDSs are expected to provide adequate support to the communications activities of ESA.

3 ELIGIBILITY AND APPOINTMENT CONDITIONS

This call is open to scientists based in ESA Member States and Japan. Lead Scientists and Co-Lead Scientists of the CI instruments and other scientists leading or involved in the (programmatic, scientific, or technical) management of the instruments or being responsible for hardware or software development and procurement activities, as well as other SWT members, are not eligible, while Co-Is of instrument teams may apply to become IDSs.

The proposals submitted by IDS candidates in response to the AO should demonstrate the candidate's expertise in one or more of the CI core science fields [see AO-D2], must clearly describe their scientific case, the relevance of their contribution to the mission and the instrument data sets needed to carry out their research programme. The proposals should also include an explicit mention of the time commitment to the proposed activities (the yearly expected commitment should be not less than 0.2 FTE) and the endorsement and financial support (as needed) from the head of the applicant's institution and/or the respective funding institution to the application.

The IDS appointment is *ad personam*.

Each selected IDS will be required to submit short annual reports of his/her CI related activities to ESA.

Should IDS positions become vacant, they will be filled through new competitive calls.

4 LETTER OF INTENT

Prospective proposers must submit a mandatory Letter of Intent (LoI) by the deadline indicated in Table 1. Proposals not preceded by a corresponding LoI will not be considered. LoIs are limited in length to two A4 pages (minimum font size 11 pt).



Letters of intent must be structured to contain the following information:

- Proposal title;
- Name and contact information of proposer;
- Concise description of the scientific objectives.

It is understood that the proposal's content may evolve between submission of the LoI and submission of the actual proposal.

5 CONTENTS OF THE PROPOSAL

Proposals submitted in response to the AO are limited in length to 10 A4 pages (minimum font size 11 pt), and must contain the following information:

- A cover letter stating the proposal title, proposer's name, affiliation, and contact information (max. 1 page);
- A curriculum vitae also including the 10 most relevant publications (max. 2 pages);
- A description of the scientific expertise relevant to the CI science objectives described in [AO-D1] (max. 2 pages);
- A description of the proposed scientific investigation and a statement concerning the time availability (max. 5 pages).

In addition, the proposal must include (in the same file, but in addition to the maximum 10 pages of the proposal):

- Letters of Endorsement, signed by the proposer's Head of Institute and/or relevant funding agency/institution, with the endorsement to the proposer's application and the explicit support with respect to the proposed activities and the availability of funding, facilities, and infrastructure, as needed to the proposer for the accomplishment of the IDS tasks.

The curriculum vitae should include all information about the applicant's career that the applicant considers relevant.

The application should also include an explicit mention of the time commitment to the proposed activities (the yearly expected commitment should be not less than 0.2 FTE).

Applicants will have to commit to their participation in the SWT meetings (on average two meetings per year are expected) and in any other activity associated with the appointment.

Details of the personal data protection measures that apply to this Call can be found in the privacy notice on the submission website.



6 EVALUATION CRITERIA

The following criteria will be used (in no particular order) in assessing and evaluating individual proposals:

- Candidate's competence and experience relative to the CI science objectives;
- The scientific value of the proposal and the level to which the proposal identifies specific competences and its relevance to the exploitation of the CI data;
- Adequacy of the time that the candidate intends to devote to activities related to the IDS role;
- Adequacy of resources available to the candidate to carry out activities related to the IDS role.

7 LETTERS OF INTENT AND PROPOSALS SUBMISSION

Letters of Intent and Proposals must be submitted electronically in PDF format (file size cannot exceed 10 MB) according to the instructions on the following web page:

<https://cosmos.esa.int/web/comet-interceptor-ids-2023>

and according to the deadlines listed in Table 1.

Proposers will receive confirmation upon successful receipt of their Letters of Intent and Proposals.

Further queries should be addressed to:

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